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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,135	06/25/2003	Takayuki Toshima	199372002501	4004

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EXAMINER

PERRIN, JOSEPH L

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/606,135	Applicant(s) TOSHIMA ET AL.	
	Examiner Joseph L. Perrin, Ph.D.	Art Unit 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 51-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 51-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02 December 2005 has been entered.

Response to Arguments

2. Applicant's arguments filed 02 December 2005 have been fully considered but they are not persuasive. Regarding applicant's newly introduced means-plus-function language, applicant amends the claimed "control unit for controlling..." to "means for controlling" and argues that neither VAARSTRA nor SMITH, JR. "discloses an element that performs the identical function." The Examiner disagrees. Applicant's claimed invention recites the following:

"means for controlling the solvent heater and the main heater to control a temperature of the substrate and a temperature of the solvent vapor such that a mixed gas molecular layer of a mixture of molecules of the solvent vapor and molecules of the process gas is formed on the substrate to alter the resist film into a water-soluble substance"

Thus, applicant's invocation of 35 USC § 112, sixth paragraph is readable on structures and equivalents thereof for performing the function of "means for controlling

the solvent heater and the main heater to control a temperature of the substrate and a temperature of the solvent vapor". This is comparable to the previous intended use recitation of a control unit capable of performing such operation and appears to alter the scope of the claim only by broadening to include more than one control unit (i.e. applicant's "means for controlling" not requiring a single control unit as claimed previously but readable on plural control units or one for each heater (anticipated by VAARTSTRA). Accordingly, recitation of the prior art references are still readable on applicant's claimed invention for at least reasons of record. It is noted that the language "such that ..." is intended use of the apparatus and not afforded significant patentable weight. That is, the claimed function of controlling temperature of a solvent heater and main heater, as taught and/or suggested by the combination of VAARSTRA and SMITH, JR. reads on applicant's claimed apparatus. Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). (emphasis in original)

3. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

4. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, VAARTSTRA is cited for the teaching of each and every structural element of applicant's claimed invention but for a single control unit which controls a solvent heater and main heater. SMITH, JR. is recited for providing the teaching of automating a control system in the semiconductor processing art by controlling temperature for the purpose of monitoring, controlling and adjusting variables of operation such as "temperature" and "valve positions" (pressure). Although it appears that applicant's claims are readable on a single control unit (VAARTSTRA in combination with SMITH, JR.) or plural control units (VAARTSTRA alone) through the claimed "means for controlling", if one construes applicant's means-plus-function language to read on a single control unit as previously claimed, the position is taken that it would have been well within the level and knowledge of one having ordinary skill in the art to provide an automated computer control system to control plural heaters to control and adjust operational variable such as temperature, particularly since it is well established that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Venner*, 120 USPQ 192.

Accordingly, applicant's claimed invention fails to structurally or functionally define over the prior art of record for at least reasons indicated above and in the rejection(s).

Claim Rejections - 35 USC § 102

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 51-60 & 63-64 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over VAARTSTRA in view of SMITH, JR.

Re claims 51-54 & 57-60, VAARTSTRA discloses a semiconductor processing apparatus including a process vessel 14, a substrate holding member 118, a plurality of supply sections including ozone and water (see, for instance, col. 3 lines 6 & 21) connectable to flow controllers 120, a solvent heater 124 which generates and heats solvent vapor (of the type supplied by Watlow Co. which are well known to include temperature controllers), a main heater 132 controlled by temperature control unit 130, a discharge flow controller 136 (see Figures 2-3 & col. 8, line 64 – col. 9, line 67). Recitation of temperature controllers controlling heaters 124 and 132 read on applicant's claimed "means for controlling the solvent heater and the main heater to control a temperature of the substrate and a temperature of the solvent vapor".

Re claims 55-56 & 63-64, VAARTSTRA further discloses using a purge gas supply (col. 8, lines 40-42). It is noted that the heater 124, which is inline

with the fluid supplies, is capable of heating the gas which would produce a hot gas source.

Although the position is taken that applicant's "means for controlling" reads on the temperature controllers of VAARTSTRA, if *arguendo* one were to construe applicant's "means for controlling" as being limited to a single controller, the prior art is replete with teachings of automated systems controlled and operated by a single "control unit" (computer). For instance, SMITH, JR. teaches that it is well known in a semiconductor processing system to provide a single control unit (computer 200) for the purpose of monitoring, controlling and adjusting variables of operation such as "temperature" and "valve positions" (pressure).

Therefore, the position is taken that a person of ordinary skill in the art at the time the invention was made would have been motivated to modify the system of VAARTSTRA with the computer system (single control system) of SMITH, JR. for the purpose of controlling operating parameters such as temperature and pressure. Moreover, the position is taken that it would have been obvious to one having ordinary skill in the art at the time the invention was made to control such operating parameters by automation via a control unit or computer since it has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Venner*, 120 USPQ 192.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over VAARTSTRA and SMITH, JR. as applied to claim 51-60 & 63-64 above, and further in view of MCCONNELL.

Recitation of VAARTSTRA and SMITH, JR. are repeated here from above. Although VAARTSTRA discloses draining the processing fluid, VAARTSTRA does not explicitly disclose using condensing means. It is noted that the prior art is replete with teachings of condensing fluid to remove vapors from a system.

MCCONNELL discloses a photoresist stripping apparatus (col. 1, line 36) using ozone (ozone injection valve 206) and further including a "mist trap" having a cooling unit and discharge unit (see Figure 2, steam condenser 171 including draining means, venting means and condenser coil; col. 19, line 58 *et seq.*). Therefore, the position is taken that a person of ordinary skill in the art at the time the invention was made would have been motivated to modify the system of VAARTSTRA and SMITH, JR., with the fluid condensing means of MCCONNELL for the purpose of recovering/removing vapor phase fluids in a wafer processing system due to the well known advantages of using condensers to recover/remove vapor phase fluids.

9. Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over VAARTSTRA, SMITH, JR., and MCCONNELL as applied to claim 61 above, and further in view of SHORTES.

Recitation of VAARTSTRA, SMITH, JR., and MCCONNELL are repeated here from above. However, none of the references explicitly disclose using an ozone killer. SHORTES teaches that it is known to provide a photoresist stripping apparatus with a means for killing/decomposing ozone upon exhausting excess ozone "as a safety precaution because of the inherently dangerous nature of ozone." (see col. 4, lines 33-42 & ozone reducing scrubber 23 of Figure 1) Therefore, the position is taken that a person of ordinary skill in the art at the time the invention was made would have been motivated to modify the combination of VAARTSTRA, SMITH, JR., and MCCONNELL with the ozone scrubber of SHORTES for the purpose of decomposing ozone to elemental oxygen to minimize hazardous materials from being exhausted/vented to the atmosphere.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

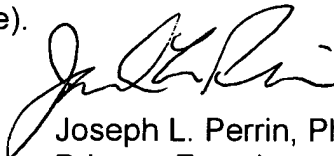
11. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph L. Perrin, Ph.D. whose telephone number is (571)272-1305. The examiner can normally be reached on M-F 7:00-4:30, except alternate Fridays.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael E. Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1746

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph L. Perrin, Ph.D.
Primary Examiner
Art Unit 1746

jlp